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Hepatitis C virus outbreak at a pain clinic in Los Angeles

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Hepatitis C virus (HCV) is a bloodborne pathogen primarily associated with intravenous drug use in the United States.[1] HCV outbreaks have been linked to breaches in infection control practices, including improper use of syringes,[2] medication vials,[2] and other medical equipment.[3] Most acute HCV infections are asymptomatic, making acute HCV cases and outbreaks challenging to identify.[4] Among ~2.2 million US adults with hepatitis C; ~33% are unaware of their infection.[5] Also, 50% of acute HCV infections will spontaneously resolve within 6 months.[6] During 2022, the Los Angeles County Department of Public Health (LACDPH) identified an HCV outbreak associated with an independent pain management clinic in Los Angeles County (LAC), California. We conducted a public health investigation to identify the outbreak source, associated HCV cases and prevent further infections.

HCVis a mandated reportable disease in LAC.An acuteHCVcase is defined as jaundice, or total bilirubin levels >3 mg/dL, or serum alanine aminotransferase (ALT) levels >200 IU/L in the absence of a morelikely diagnosis andpositiveHCVdetectionbypolymerase chain reaction (PCR) or positive HCV antigen(s).[7] Reported cases of acute HCVare rare, and every reported case is investigated. When indicated, LACDPH conducts site visits to evaluate potential infection control breaches at healthcare facilities, identify additional cases, and notify the public about potential exposure.

In September 2022, LACDPH was notified of a patient with acute HCV infection (patient A). Medical records review confirmed that the patient's illness met the acute HCV case definition. On interview, patient A did not report any HCV risk factors ≤6months before symptom onset, except for left piriformis and sciatic nerve injections on 2 separate dates at a pain clinic. In September, 2 months after the second procedure date, the patient was admitted to the hospital with 1 week of dark urine and right upper abdominal pain associated with nausea. Laboratory results were notable for transaminitis (ALT, 537 U/L; aspartate

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aminotransferase 1,087U/L) and elevated bilirubin (4.4 mg/dL). The hepatitis C antibody test was positive.

The LACDPH conducted a site visit to review the clinic's infection control policies, interview staff, and observe procedures. No obvious infection control breaches were noted, except for a multidose lidocaine vial used by the anesthetist for conscious sedation and stored in a medication cart within the procedure room. Multidose vials were stored and reused for ≤28 days after being opened. To identify a possible source for infection, a list of patients treated ≤28 days before patient A's procedure dates was requested. Names were matched against LACDPH's HCV registry.

Of 127 pain clinic patients treated ≤28 days before patient A's procedure, 2 were previously reported with a positive HCV PCR test result. Patient B had chronic HCV infection. Patient C was determined to have acute HCV infection (Table 1). According to the clinic's procedure log, patient B received a procedure on the same day as and before patient A and patient C. All 3 patients had HCV genotype 1b. Sequencing could not be performed on patients A and C because of insufficient viral load; their infections spontaneously resolved. Patient B and clinic staff declined testing.

Given evidence indicating a likely HCV transmission event on the same day patients A, B, and C received procedures, we recommended notification of all patients who received procedures 30 days after that date. During December 2022, exposure notification letters were mailed to 140 patients recommending HIV, hepatitis B, and hepatitis C testing. After receiving the notification letter, patient D contacted the clinic. He was hospitalized for hepatitis C in a different county during August 2022. Patient D received a procedure on the same day, in July, as the other 3 patients and immediately after patient B. To encourage testing and to ensure receipt of exposure notification letters, we called all 140 patients; 100 (71%) were successfully contacted and 76 (54%) reported they had scheduled or completed recommended postexposure testing. Recommendations to the clinic included updated infection control practices, proper use of syringes and needles, keeping multidose vials in a dedicated clean medication preparation area (away from immediate patient treatment areas), staff training, and an outbreak notification sign for the clinic to post.[8] We continued cross referencing the exposure patient list with the California Department of Public Health and LACDPH HCV registries. No additional patients with a positive HCV RNA test result were reported.

Although we were unable to identify a specific source of HCV transmission, evidence supports the possibility that a multidose medication vial was contaminated by reuse of a needle or syringe. Improper handling of multidose vials has been linked to multiple bloodborne pathogen outbreaks[2,3] and are the basis of CDC recommendations for safe injection practices when using multidose vials.[9] Single-use vials, drawing medication outside the patient's room, and random audits of infection control practices by infection prevention staff or departments of public health could prevent future outbreaks.[9] Our investigation highlights an ongoing need to assure that providers consistently apply policies and procedures to prevent healthcare-associated transmission of bloodborne pathogens when using multidose vials.

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Table 1.

Patient Procedure Time Schedule and Medications Used During Transmission Event Day at Pain Clinic

		Medications Used		
Procedure Time	**Patient**	**Conscious Sedation**	**Procedure Medications**	**Hepatitis C Infection**
8:44 A.M.	B (presumed source)	2% Lidocaine Propofol	1% lidocaine Iopamidol Dexamethasone + NS	Chronic
9:24 A.M.	D	2% Lidocaine Propofol	1% lidocaine 0.25% bupivacaine + methyprednisolone	Acute
9:45 A.M.	A (index)	2% Lidocaine Propofol	1% lidocaine Iopamidol	Acute
10:03 A.M.	C	2% Lidocaine Propofol	1% lidocaine Iopamidol Dexamethasone + NS	Acute

Note. NS, normal saline.